

by BLAST analysis using default parameters, to the full length of said sequence set forth in any one of SEQ ID Nos. 2, 4, or 6.

9. (Twice Amended) The nucleic acid of claim 8, having a sequence selected from the group consisting of SEQ. ID. Nos. 1, 3, 5, 7, 16 or 17, or a nucleic acid sequence which is at least 90% homologous to the full length of SEQ ID Nos. 1, 3, 5, 7, 16, or 17 as determined by BLAST analysis using default parameters.

10. (Twice Amended) The nucleic acid of claim 9, comprising the sequence with SEQ ID NO: 31 or an equivalent sequence which encodes the same polypeptide having regard to the degeneracy of the nucleic acid code, or a sequence at least 90% homologous thereto over the full length of SEQ ID NO: 31, as determined by BLAST analysis using default parameters.

16. (Twice Amended) A method for producing a 5'OT-EST polypeptide having a sequence selected from the group consisting of (a) the sequences set forth in any one of SEQ ID Nos. 2, 4, 6, or (b) sequences which are at least 90% homologous as determined by BLAST analysis using default parameters to the full length of said sequences set forth in any one of SEQ ID Nos. 2, 4, or 6, comprising transforming a cell with a vector of any one of claims 11 to 14 and culturing the cell to produce the polypeptide.

28. (Twice Amended) A diagnostic reagent for the detection of mutations, polymorphisms or other changes in 5'OT-EST which may predispose an individual to obesity, comprising at least one detectably labeled nucleic acid probe of 150 nucleotides or less which is capable of hybridizing to a sequence selected from the group consisting of (a) any one of SEQ ID NOs 1, 3 or 5, and (b) a sequence at least 90% identical to the full length of a said sequence as determined by BLAST analysis using default parameters.

31. (Amended) The nucleic acid of claim 8, wherein said 5'OT-EST polypeptide, in vivo, modulates the obesity of an animal which expresses said 5'OT-EST polypeptide.
32. (Amended) The nucleic acid of claim 31, wherein said 5'OT-EST polypeptide modulates the obesity of a transgenic animal which expresses said 5'-OT-EST polypeptide.
33. (Amended) The nucleic acid of any one of claims 8, 30, or 31 wherein said 5'OT-EST polypeptide comprises the sequence of SEQ ID NO: 37.
34. (Amended) The nucleic acid of any one of claims 8, 30, or 31 wherein said 5'OT-EST polypeptide comprises the sequence of SEQ ID NO: 8.

Please add new claim 35 as follows:

35. (New) A method for the detection of mutations, polymorphisms or other changes in 5'OT-EST which may predispose an individual to obesity, said method comprising hybridizing a nucleic acid sample from an individual to a detectably labeled probe that is capable of hybridizing to a sequence selected from the group consisting of (a) any one of SEQ ID NOs 1, 3 or 5, and (b) a sequence at least 90% identical over the full length of one of SEQ ID NOs 1, 3 or 5, wherein a mutation, polymorphism or other change in 5'OT-EST sequence in said individual is detected.

#### REMARKS

Claims 8-16, 28 and 30-34 are pending. Claims 8-10, 16, 28 and 31-34 are proposed to be amended herein. New claim 35 is proposed to be added herein.

The present invention relates to a gene which is involved in the control of obesity and fertility. In particular the sequences described in the present invention are involved in late onset obesity in males. Thus, the present invention relates to a nucleic acid molecule encoding a 5'OT-